1 **CLAIMS**

2 What is claimed is:

3 1.   A computer-implemented method for developing a reusable

4 electronic circuit design module, wherein the design module

5 is comprised of one or more functional design elements

6 comprising the design module, comprising:

7   entering the functional design elements into a

8 database;

9   entering documentation elements into the database;

10   linking the functional design elements with selected

11 ones of the documentation elements;

12   simulating a testbench with the design module, whereby

13 simulation results are generated;

14   storing the simulation results in the database; and

15   linking the simulation results with the functional

16 design elements.

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18 2.   The method of claim 1, further comprising:

19   translating the functional design elements into a

20 netlist; and

21   linking elements of the netlist with selected ones of

22 the functional design elements.

23

24 3.   The method of claim 2, further comprising:

25   translating the functional design elements into a

26 physical implementation; and

27   linking elements of the physical implementation with

28 selected ones of the functional design elements.

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30 4.   The method of claim 1, further comprising:

31   entering simulation elements in the database; and

32   linking the simulation elements to associated ones of

33 the design elements.

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35 5.   The method of claim 4, further comprising:

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1   entering documentation for a design script in the
2 database; and
3   linking the documentation of the design script to the
4 design elements comprising the design module.
5
6 6.   The method of claim 4, further comprising:
7   entering documentation for the simulation elements in
8 the database; and
9   linking the documentation for the simulation elements
10 with associated ones of the simulation elements.
11
12 7.   The method of claim 6, further comprising:
13   inspecting the functional design elements and
14 simulation elements for associated documentation; and
15   reporting documentation deficiencies in association
16 with the functional design elements and simulation design
17 elements.
18
19 8.   The method of claim 1, further comprising:
20   inspecting the functional design elements for
21 associated documentation; and
22   reporting documentation deficiencies in association
23 with the functional design elements.
24
25 9.   The method of claim 1, further comprising:
26   inspecting the functional design elements for
27 undesirable design characteristics; and
28   reporting the undesirable design characteristics found
29 in the functional design elements.
30
31 10.   The method of claim 9, further comprising:
32   inspecting the functional design elements for
33 undesirable hierarchical characteristics; and
34   reporting discovered ones of the undesirable
35 hierarchical characteristics.
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1   11.   The method of claim 9, further comprising:

2   inspecting the functional design elements for adherence

3   to predefined design rules; and

4   reporting violations of the design rules.

5

6   12.   The method of claim 11, further comprising providing

7   assistance in specifying the design rules for the functional

8   design elements.

9

10   13.   The method of claim 9, further comprising:

11   monitoring changes made to the functional design

12   elements; and

13   indicating which of the functional design elements are

14   dependent on the changes.

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16   14.   The method of claim 1, further comprising:

17   translating the functional design elements into a

18   physical implementation; and

19   linking elements of the physical implementation with

20   selected ones of the functional design elements.

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22   15.   The method of claim 1, further comprising requiring

23   specification of parameters at a top level of a hierarchy of

24   the design module.

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26   16.   The method of claim 1, further comprising displaying

27   the functional design elements linked to errors in the

28   simulation results.

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30   17.   The method of claim 16, further comprising displaying

31   documentation elements associated with errors in the

32   simulation results.

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34   18.   An apparatus for developing a reusable electronic

35   circuit design module, wherein the design module is

1   comprised of one or more functional design elements

2   comprising the design module, comprising:

3   means for entering the functional design elements into

4   a database;

5   means for entering documentation elements into the

6   database;

7   means for linking the functional design elements with

8   selected ones of the documentation elements;

9   means for simulating a testbench with the design

10   module, whereby simulation results are generated;

11   means for storing the simulation results in the

12   database; and

13   means for linking the simulation results with the

14   functional design elements.

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16   19. A system for developing a reusable electronic circuit

17   design module, wherein the design module is comprised of one

18   or more functional design elements comprising the design

19   module, comprising:

20   a database arranged for storage of the design elements

21   and documentation elements;

22   a design inspector coupled to the database, the design

23   inspector configured and arranged to link the functional

24   design elements with selected ones of the documentation

25   elements;

26   a debugging-support module coupled to the simulator and

27   to the database, the debugging-support module configured and

28   arranged to generate a netlist from the design module,

29   wherein the netlist is suitable for simulation;

30   a functional simulator coupled to the debugging-support

31   module, the simulator configured and arranged to simulate a

32   testbench with the design module, whereby simulation results

33   are generated; and

34   wherein the debugging-support module is further

35   configured and arranged to store the simulation results in

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1　the database and link the simulation results with the
2　functional design elements.